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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/512,077

12/09/2004

Olivier Marty

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23338 7590 07/23/2007  
DENNISON, SCHULTZ & MACDONALD  
1727 KING STREET  
SUITE 105  
ALEXANDRIA, VA 22314

EXAMINER

RAO, G NAGESH

ART UNIT

PAPER NUMBER

1722

MAIL DATE

DELIVERY MODE

07/23/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/512,077	Applicant(s) MARTY ET AL.	
	Examiner G. Nagesh Rao	Art Unit 1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 17-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Information Disclosure Statement***

1) The references filed 7/2/07 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The references have been placed in the application file, but the information referred to therein has not been considered.

***Priority***

2) Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon an application filed in France on 5/7/02. A claim for priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months thereafter.

*Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3) Claims 17-24 are rejected under 35 U.S.C. 102(b) as being anticipated by S.

I. Romanov et. al. "GeSi Films with Reduced Dislocation Density Grown by Molecular-Beam Epitaxy on Compliant Substrates Based on Porous Silicon", Applied Physics Letters, Vol 75 No. 26, December 1999, Pp.4118-4120.

Romanov et. al. teaches the process of growing a high-quality heteroepitaxial layers via the use of compliant Si substrates, thin epitaxial Si film on a high density porous layer, and including the deposition of GeSi films, all of which this substrate layered structured device is made at the nano-scale and inherently useable in conventional micro-nano-electronics or technology. The nanostructured support layer may be composed of a compliant substrate that is a double layer of porous Si and whereby the top layer is at the nano-scale and the bottom layer is not at the nano-scale, furthermore the thin layer of epitaxial Si can be formed and in the alternative grown in conjunction or separately on the compliant substrate a GeSi thin film whereby the dislocations that occur between

the upper surface of the compliant substrate can initiate internal strains with deposited GeSi thin film with lattice misformations occurring in order to ensure a much more stabler setting for these heteroepitaxial layering initiatives (See Table 1, Figure 1, P. 4118 Col 1 Line 25 – P. 4119 Col 1 Line 17, P. 4119 Col 2 Line 9 – P. 4120 Col 2 Line 13).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4) Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over S. I. Romanov et. al. "GeSi Films with Reduced Dislocation Density Grown by Molecular-Beam Epitaxy on Compliant Substrates Based on Porous Silicon", Applied Physics Letters, Vol 75 No. 26, December 1999, Pp.4118-4120 in view of Pechenik (US Patent No. 6,365,059).

Romanov et. al. as mentioned before described processes for making a heteroepitaxial layered substrate based material at the nano-scale.

However Romanov et. al. failed to teach a lithographic operation to reveal piezoelectric lines or the very least the use of piezoelectric materials incorporated into the process of making the nano-based structured device.

In analogous art pertaining to the manufacturing of nano-based structures, Pechenik 059 teaches the use of methods pertaining to the manufacturing of nano-scale electronic devices. Whereby it is well known to use nano-lithography in etching out portions of material to create patterns for building ground of fabrication of high end circuitry and dielectrics. As well it is well known to employ the use of piezoelectric thin films in these nano-based devices in order to create a more useful surface attaching environment to the thin film structure (See Col 1 Lines 1-68 – Col 2 Lines 1-68, Col 5 Lines 1-11, Col 6 Lines 59-68, and Col 7 Lines 1-18).

It would therefore be obvious to one having ordinary skill in the art at the time of the invention to enhance the teachings of Romanov et. al. with that of Pechenik 059, in the hopes of creating a much more highly efficient nano-based device (See Col 7 Lines 5-10).

### ***Response to Arguments***

5) Applicant's arguments filed 7/2/07 have been fully considered but they are not persuasive. Upon reviewing remarks examiner has considered the amendments to the application. Examiner is in concurrence with the corrections required for the specification and appreciates the submission of the prior art. Applicant's however

should resubmit a proper IDS form, since the papers were never filed correctly the first time for consideration as mentioned in the non-final of 3/2/07. Till then the references will not be considered until compliance is properly met.

With respect to foreign priority examiner reiterates that applicant's are not afforded foreign priority, because the basis of this priority stems from the 371 Papers (PCT/FR03/01423; 05/07/2003) submitted by applicant as basis for an effective filing date, except that the papers are not filed/disclosed in English but rather in French which is in violation for receiving said benefit of priority. Therefore with the 371 not in full compliance as benefiting for effective filing date, the foreign priority documents can not attain benefit and therefore are considered over the 12 month period for priority consideration.

With respect to the rejection, applicant's lay claim to the thin layer being treated with the nanostructure support to generate internal strains, i.e. broadly interpreted as "strains" in what? The thin layer or the nano-structured support, in other words it reads either way. Therefore examiner applied Romanov et. al. appropriately with the broadness and scope of applicant's claimed language even with current new amended claims. Applicant's do not outright claim "straining the support" to create a strain in the thin layer. However Romanov et. al. clearly teaches a thin layer that is strained due to the support as noted in the



aforementioned rejection and this benefits for prevention of problems due to lattice mismatching.

Applicant's discuss no rationale or reason for examiner not to combine Romanov et. al. with that of Pechenik 059, except that Pechenik 059 does not teach the whole issue of "strain" limitation. With that said, applicant's provided no argument against the motivation to combine, therefore examiner is construing that as an implicit concurrence in the correct application of the USC 103(a) rejection.

### ***Conclusion***

6) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

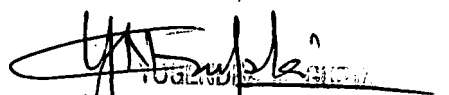
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will

be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to G. Nagesh Rao whose telephone number is (571) 272-2946. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on (571)272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
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